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RESULTS OF THE ARCHBOLD EXPEDITIONS. NO. 1

A NEW GENUS AND SPECIES OF SQUIRREL FROM CELEBES

BY R. ARCHBOLD AND G. H. H. TATE

At least seven species of true squirrels have been recorded from Celebes: *notatus* Boddaert; *rubriventer*, *leucomus*, and *murinus*, all of Müller and Schlegel; *prevosti* Desmarest; *weberi* Jentink; and *rosenbergi* Jentink. In 1930, G. Heinrich collected the series of six "long-nosed" squirrels described in the pages following, three of which are deposited in the collections of The American Museum of Natural History. Although it was readily established that the species was new, considerable doubt arose as to its allocation generically. Descriptions of the "long-nosed" genera of squirrels of eastern Asia and the Sunda region were carefully checked and a table of measurements of the genotypes was prepared. It is to be noted, however, that adequate generic definitions for the several genera concerned are not extant, in consequence of which it was necessary to seek mainly among specific descriptions for facts of possible generic worth. The works of Major and of Frechkop on dentition, of Thomas and of Pocock on male reproductive anatomy, and of Pocock on external characters were considered. The new genus has been compared with the following: *Dremomys* (=*Zetis*),[1] with type *pernyi; Menetes*, with type *berdmorei; Lariscus*, with type *insignis; Tomeutes*, with type *lokroides;* and *Rhinosciurus*[2] with type *tupaioides*. The three last have developed numerous species and races in Malaysia and the Sunda region. In none of these genera is such an extreme elongation of the snout and claws to be observed as occurs in the

[1] *Dremomys* Heude included originally the "rock-jumpers" *pernyi, saltitans, collaris,* and *latro*. In the absence of previous designation *pernyi* Milne Edwards is here proposed as type of *Dremomys*. *Zetis* Thomas with type *rufigenus* was said by its author to include also *pernyi, pyrrhomerus, lokriah, everetti,* and *owstoni*.

[2] The status of the generic name and genotype of *Rhinosciurus* is rather obscure. Gray's (1843) name *tupaioides* was a *nomen nudum*, since it was based upon a specimen from Singapore without description (the heading "Sharp nosed Squirrel" is not to be considered a description) and had *Sciurus laticaudatus* questioningly synonymized with it. Cantor (1846) described what was possibly *tupaioides* quite fully under the name *laticaudatus* of Müller and Schlegel; and Blyth (1855), using *tupaioides*, employed certain clearly descriptive phrases as supplementing Cantor's description of the Malay animal. Finally Gray (1867) provided a short definition of his *tupaioides*. In view of the foregoing, *tupaioides* must be cited as from Blyth, 1855.

Because *tupaioides* Gray 1843 was a *nomen nudum*, *Rhinosciurus* Gray 1843 was also a *nomen nudum*. It may, however, be cited as from Blyth (1855), who used it in conjunction with his *tupaioides* in the text under his general heading "Sc. tupaioides?." A generic description appeared in Gray (1847).

Celebes form, nor does there appear in the literature any allusion to extreme lengthening of the claws among oriental squirrels. The claws depicted on the plate of *Rhinosciurus laticaudatus* are those of a normal tree squirrel. In general, too, the species of the foregoing genera are of much smaller size than the Celebes animal. Compared with the figures given by Pocock (1922) in his study of the feet of squirrels, the claws of the new form approach most nearly those of *Euxerus* and *Geoxerus* (Pocock, Fig. 53), but exceed them in length.

The general proportions of the types of the species of *Rhinosciurus*, that genus appearing most nearly allied to the Celebes genus, are shown on the table (p. 5). It will be noted that the hind foot in no case exceeds 45 mm. nor the nasals 21 mm. Data on the lengths of claws is unfortunately not available.

On the basis then of the extreme length of the nasals of old adults, the shortness of the tail,[1] the long narrow foot, and the pronounced elongation of the claws,—this last perhaps in relation to a shift from arboreal to terrestrial or even semi-fossorial habits—it has seemed advisable to set up a separate genus, which may be named *Hyosciurus*.

HYOSCIURUS,[2] new genus

DESCRIPTION.—A callosciurine genus of squirrel in which the nasal part of the skull reaches an extreme degree of lengthening in the adult (length of nasals exceeds length of frontals); the transverse suture between frontals and parietals forms an irregular, backwardly bowed arch, in contrast to the angular figure of that suture shown for *Rhinosciurus laticaudatus* Müller and Schlegel[3]; nasals and premaxillae strongly produced in front of incisors; molar series carried forward so that the lacrimal is on a level with m^2 instead of m^1. Angular process of mandible strongly reflected after the manner of marsupials (this character partially developed in *Callosciurus*, *Dremomys*, etc.). Hind foot not typical of the normal sturdy tree-squirrel foot, but long and slender, the width at the base of the 5th metatarsal only 7 mm. (about 14 per cent of foot length, excluding the claws). Claws very long and but little curved; those of the forefoot about 8 mm. (or 80 per cent of length of 4th digit); those of hind foot 7 mm. (nearly 60 per cent of length of 4th digit). Tail very short, from 50 to 70 per cent of length of head and body. Mammary formula not determined.

For illustrations of fore foot, skull, and teeth see figures 1 to 7.

Hyosciurus heinrichi, new species

TYPE.—No. 101310, Amer. Mus. Nat. Hist.; ♂, adult; Latimodjong Mts., southern Celebes, 2300 meters; July 19, 1930; collector, G. Heinrich. Skin and skull in good condition.

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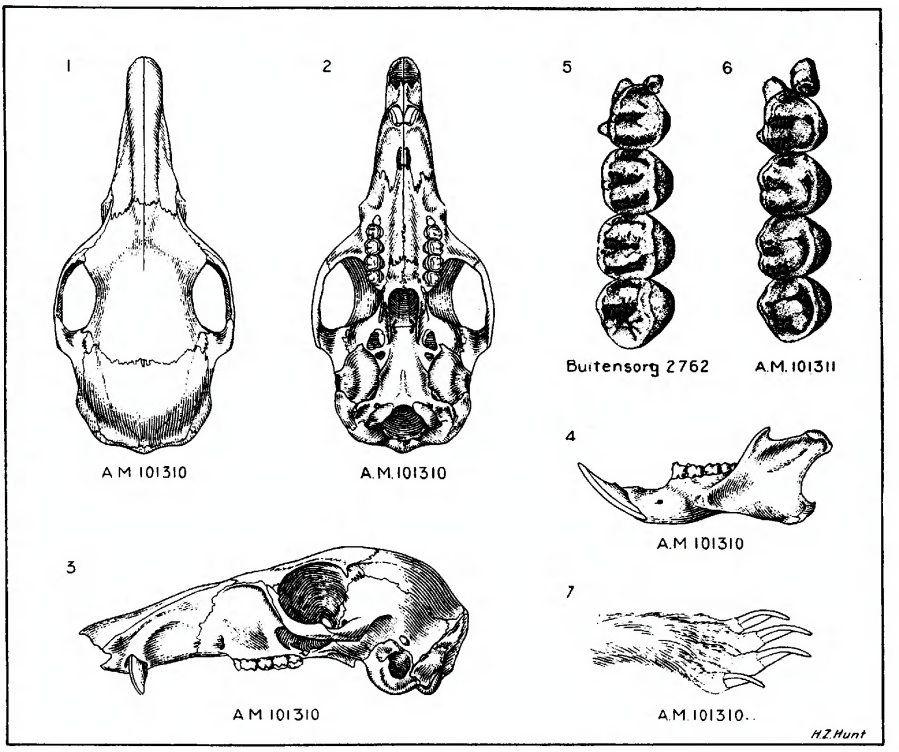
[1] Note that the ratio of tail length to body length in allied genera appears to be highly variable for any one species or race.

[2] ὗς, a pig; σκίουρος, squirrel. Heinrich employed the descriptive term "Schweineichhörnchen" on his labels and in his notebook.

[3] 1839, Bijdr. Nat. Hist., p. 100, Pl. xv, figs. 1–3.

GENERAL CHARACTERS.—A "long-nosed" ground squirrel with ears short and rounded; general color above fuscous, flecked with tawny; ventrally with an irregular median band of white about 30 mm. in width extending from mouth to belly.

DESCRIPTION.—Hairs of back not channeled, distinctly fusiform, the subterminal portion thicker than the base. Fur thick and rather soft, the dorsal hairs fuscous, with individual subterminal light tawny bands which produce the flecked effect mentioned above. Their bases are grayish white. No accessory stripes or spots. Under parts



Figs. 1 to 7. *Hyosciurus heinrichi.*

1 to 4. Views of skull of type, three-fourths natural size. 5 and 6, right upper crown views of molars, three times natural size: 5, of a young animal with unworn molars; 6, of an older specimen with teeth somewhat worn. 7, right fore foot of type, seen from outside, showing form of claws and their length in proportion to the digits, three-fourths natural size.

with longitudinal white band described above, the hairs white to the roots. Tail colored essentially as body, individual hairs about 35 mm. long. Backs of hands and feet darker than body tone. Vibrissae about 35 mm.

Skull with palate lacking a postnasal spine in type (present in other specimens). Molar series considerably longer than width of intermolar palate, parallel. Molars generally rather massive in comparison with those of *pyrrhomerus*. Tooth row shown in figures 5 and 6.

MEASUREMENTS.—See table (p. 6).

This species is founded upon the type, another male, and a younger individual whose sex is not indicated, all from Latimodjong Mts., 2300 meters, southern Celebes. A second series of three young adults (1 male, 2 females) taken also by Heinrich at Ile Ile, 1700 meters, northern Celebes, is referred to the same species.

Upon studying the table of measurements it becomes clear that full development of the rhinal portion of the skull is only attained with age. In both old and young animals the dimensions of the frontals and parietals are about alike, though the nasals of old specimens have become very much longer than those of young ones. The difference in palatal dimensions would appear to be correlated with sex, but the point requires further observation. The longer tooth rows seen in males may more probably indicate differences in sex.

Three specimens of the series will remain in the American Museum; three will be returned to the Buitensorg Museum, Java.

It is a pleasure to name this interesting species for Mr. G. Heinrich, who has secured so many important specimens of mammals from Celebes.

Dimensions of Types of Species and Other Individuals of *Rhinosciurus*

	Sex and Age	Head and Body	Tail	Hind Foot	Skull: Occipito-nasal Length	Condylobasal Length	Basal Length	Basilar Length	Zygomatic Breadth	Interorbital Breadth	Nasals	Breadth Brain Case	Palatal Length	Palatilar Length	Diastema	Length of Bulla	Length Upper Molar Series	Mandibular Length
Rhinosciurus leo	old ♂	204	122	41.0	58.0	53.0			29.0				32.5			12.3		
robinsoni	ad. ♀	199	90	37.0	53.0			43.5	25.5	12.0	18.5 × 5.3	20.5			15.5	10.0	11.8	
peracer	ad. ♀	213	122	41.0	56.0	52.0			26.6							11.7	10.0 (excl. p^3)	
leo rhionis	ad. ♀	212	135	42.5	59.0	55.0			28.8				32.0			12.0	10.5 (without p^3)	
laticaudatus (Müller and Schlegel)	ad. ♀[1]	120	170		55.3	54.0			27.2		16.5	21.0			17.6	12.4		32.4
Sp. (Miller, 1903)	ad. ♀	230	130	44.0 (46)	59.0		52	49.4	28.6	13.0	21.0 × 6.0		31.0		17.0		12.0 (alv.)	35.6
Sp. (Miller, 1906)	old ♂	213	65	38.5 (41)	56.0		49	46.4		13.8	20.4 × 5.8				16.4		11.8 (alv.)	35.0
laticaudatus saturatus	ad. ♀	205	130	45.0	58.1	52.0			26.2	13.0		19.8		30.0	17.1		12.1	
incultus	ad. ♀	230	130	45.0		53.8			28.3	13.4	22	23.0					12.5	

[1]Jentink, 1883, Notes Leyden Mus., V, p. 141, states the type of the species to have been an adult female. These measurements are taken from Müller and Schlegel, plate xv. They may be considered as giving proportions of the type skull of *laticaudatus*.

DIMENSIONS OF *Hyosciurus heinrichi*

	Sex and Age	Head and Body Length	Tail Length	Hind Foot (s.u.)	Skull: Occipito-nasal Length	Condyloincisive Length	Basal Length	Basilar Length	Zygomatic Breadth	Breadth Brain Case	Interorbital Breadth	Length Nasals Median Suture	Length Frontal Median Suture	Length Parietal Median Suture	Palatal Length	Palatilar Length	Palatal Foramina	Diastema	Length of Bulla	Length Upper Molar Series Excl. p^2	Mandibular Length
Latimodjong, S. Celebes:																					
A. M. 101310 (Buitensorg 2595)	ad. ♂ (type)	211	104	51.0	64.4	51.1	52.0	44.0	30.0	22.6	15.6	25.9 × 5.5	24.8	16.0	33.2	26.5	3.6	14.1	9.1	10.0	37.3
(Buitensorg 2594)	old ad. ♂	238	97	51.0	66.6	53.2	52.5	46.4	31.1	22.8	15.9	27.3 × 6.3	24.8	17.3	33.0	27.6	3.6	15.2	8.9	10.3	37.9
A.M. 101309 (Buitensorg 2593)	y.ad. ?	204	95	48.5	61.3	49.2	48.4	42.5	29.5	22.5	15.0	22.0 × 5.3	25.1	17.6	31.3	25.9	3.7	13.9	8.7	10.7	36.7
Ile Ile, N. Celebes:																					
A.M. 101311 (Buitensorg 2596)	y.ad. ♂	197	102	51.0	63.6	51.0	51.2	43.9	29.5	22.6	15.7	26.5 × 5.7	24.4	16.2	34.0	27.0	3.1	14.2	8.6	10.0	37.4
A.M. 10138 (Buitensorg 2763)	y.ad. ♀	196	133	51.0	57.0	47.9	45.6	41.3	29.7	22.7	14.8	19.8 × 5.6	24.7	17.1	29.3	25.0	3.2	12.5	8.8	10.2	34.0
(Buitensorg 2762)	y.ad. ♀	205	121	55.0[1]	57.5	50.3	47.6	43.0	31.2	23.7	16.5	19.2 × 5.9	24.2	17.0	29.4	24.8	3.6	12.9	9.5	10.6	35.1

[1]Error. Should read 51.